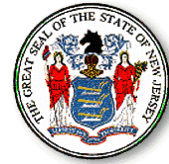




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Asthma in New Jersey

Chapter 7: Mortality

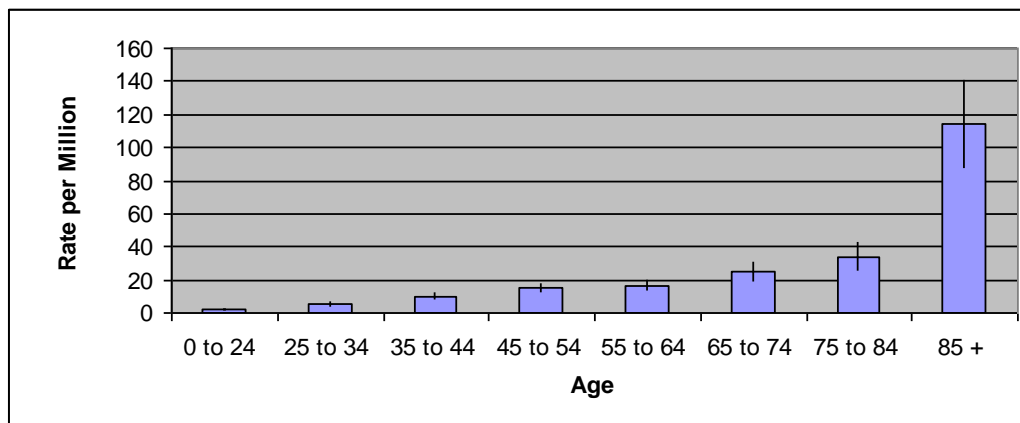
The New Jersey Department of Health and Senior Services (NJDHSS) monitors asthma deaths and asthma related deaths using the annual Multiple Cause-of-Death files maintained by the New Jersey Center for Health Statistics (NJCHS). Files are compiled from death certificates that have been registered for New Jersey residents. New Jersey law requires that a death certificate be completed by the appropriate authority when a death occurs in the State and information about out of State deaths is acquired through participation in the national Vital Statistics Cooperative Program.¹ Reporting is considered to be about 99% complete for deaths occurring in the United States.²

Asthma Deaths

In this report, an asthma death is defined as one with an underlying cause in the ICD-10 code range J45-J46 (1999-present) or the ICD-9 code range 493.0-493.9 (1989-1998).

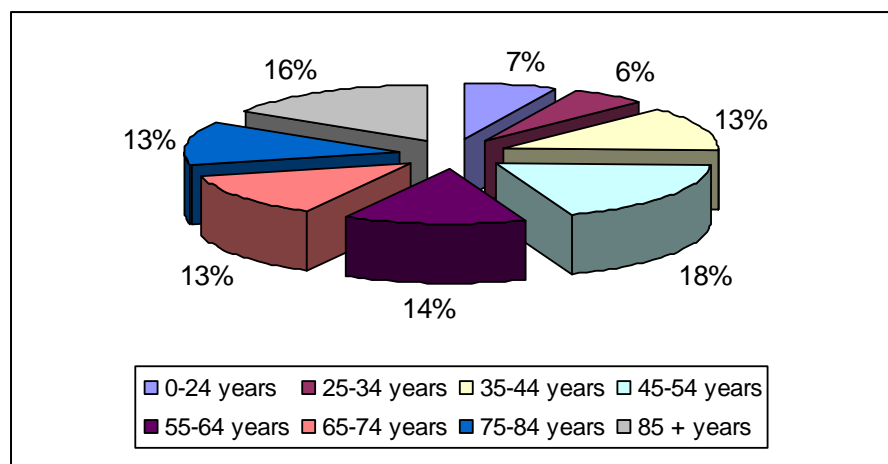
Figure 1

**Average Annual Crude Asthma Death Rate per Million Population
by Age Group, New Jersey, 2003-2006**



Data Source – NJ Multiple Cause of Death Files, 2003-2006

Population Source – Annual Estimates of the Resident Population for New Jersey, 2003-2006

Figure 2**Distribution of Asthma Deaths by Age Group, New Jersey, 2003-2006**

Data Source – NJ Multiple Cause of Death Files, 2003-2006

Table 1						
Number of Asthma Deaths and Average Annual Crude Asthma Death Rate by Age Group, New Jersey, 2003-2006						
	Number of Deaths				Rate per Million Population	
Age	2003	2004	2005	2006	Rate	95% CI³
0-24 years	7	7	7	9	2.7	1.7 – 3.6
25-34 years	10	*	8	*	5.6	3.4 – 7.8
35-44 years	16	9	15	16	10.1	7.5 – 12.8
45-54 years	21	16	17	25	15.5	12.1 – 18.9
55-64 years	18	16	15	11	16.8	12.6 – 21.1
65-74 years	11	17	11	17	25.0	18.5 – 31.6
75-84 years	14	10	18	14	34.1	25.2 – 43.1
85+ years	16	25	15	13	114.3	87.4 – 141.3
Total	113	104	106	108	12.5	11.3 – 13.7

*Number of deaths is less than or equal to 5

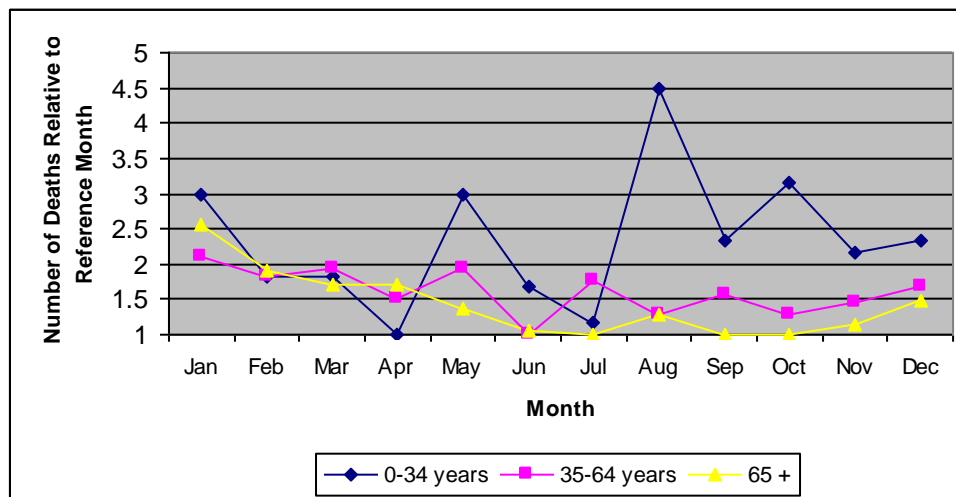
Data Source – NJ Multiple Cause of Death Files, 2003-2006

Population Source – Annual Estimates of the Resident Population for New Jersey, 2003-2006

Death from asthma is relatively uncommon. The number of asthma deaths during 2003-2006 ranged from 104 to 113 per year and the average annual asthma death rate during this time period was about 12.5 deaths per million residents. Rates could not be calculated for children alone due to a small number of asthma deaths. Rates increased with increasing age and the highest rate was found among residents aged 85 years and older (114.3 asthma deaths per million residents). Although death rates were substantially higher among the oldest age group, the number of asthma deaths was distributed more evenly across age groups with the highest number actually occurring among residents 45-54 years of age (18% of all asthma deaths).

Figure 3

**Ratio of Asthma Death Count per Month Relative to Reference Month*
by Age Group, New Jersey, 1999-2006**



*Month with the fewest asthma deaths for each age group used as the reference month
Data Source – NJ Multiple Cause of Death Files, 1999-2006

Table 2						
Ratio of Asthma Death Count per Month Relative to Reference Month by Age Group, New Jersey, 1999-2006						
	Number of Deaths			Ratio		
Month	0-34 years	35-64 years	65 + Years	0-34 years	35-64 years	65 + years
January	18	38	54	3.0	2.1	2.6
February	11	33	40	1.8	1.8	1.9
March	11	35	36	1.8	1.9	1.7
April	6	27	36	Reference	1.5	1.7
May	18	35	29	3.0	1.9	1.4
June	10	18	22	1.7	Reference	Reference
July	7	32	21	1.2	1.8	1.0
August	27	23	27	4.5	1.3	1.3
September	14	28	21	2.3	1.6	1.0
October	19	23	21	3.2	1.3	1.0
November	13	26	24	2.2	1.4	1.1
December	14	30	31	2.3	1.7	1.5

Data Source – NJ Multiple Cause of Death Files, 1999-2006

The asthma death count among New Jersey residents appears to vary by age group and month of death. Given the relatively small number of asthma deaths, even after combining several years of data, monthly figures should be interpreted with caution. Nonetheless, mortality patterns do seem to support the existence of age specific seasonal patterns and this observation is consistent with observations on the national level.⁴

Table 3		
Contributing Causes* of Asthma Death, New Jersey, 2003-2006		
Contributing Cause (ICD-10)⁵	Number of Asthma Deaths	Percent of Asthma Deaths
Diseases of the heart (I00-I09, I11, I13, I20-I51)	136	31.6%
Chronic lower respiratory diseases excluding asthma (J40-J44, J47)	77	17.9%
Essential hypertension and hypertensive renal disease (I10, I12, I15)	52	12.1%
Diabetes mellitus (E10-E14)	43	10.0%
Influenza and pneumonia (J10-J18)	41	9.5%
Septicemia (A40-41)	17	3.9%
Accidents - unintentional injuries (V01-X59, Y85-Y86)	14	3.2%
Nephritis, nephrotic syndrome and nephrosis (N00-N07, N17-N19, N25-N27)	10	2.3%
Cerebrovascular diseases (I60-I69)	10	2.3%
Malignant neoplasm (C00-C97)	7	1.6%

*Considers only those causes designated by the National Center for Health Statistics as being rankable⁶

A total of 431 asthma deaths were reported during 2003-2006

Data Source – NJ Multiple Cause of Death Files, 2003-2006

Contributing causes J45-J46 (asthma) were excluded

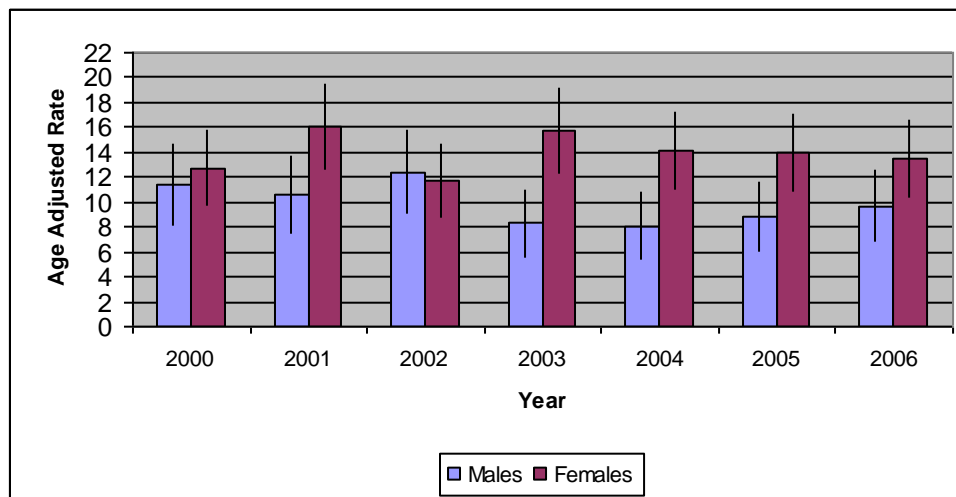
Causes associated with ≤ 5 deaths are not presented

Reporting officials may list up to 20 contributing diagnoses of death in addition to the underlying cause of death. A total of 852 contributing diagnostic codes were reported for the 431 asthma deaths that occurred from 2003-2006. Considering only those diagnoses represented in the National Center for Health Statistics' (NCHS) list of rankable causes of death⁶, the most common contributing causes associated with asthma death are summarized in Table 3. Considering those diagnoses that are excluded from the NCHS' list, the following additional contributing causes of asthma death were also noted:

- Mental and behavioral disorders due to use of tobacco (F17) was listed as a contributing cause for 54 (12.5%) of asthma deaths
- Mental and behavioral disorders due to psychoactive substance use other than tobacco (F10-F16, F18, F19) was listed as a contributing cause for 19 (4.4%) of asthma deaths
- Obesity (E66) was listed as a contributing cause for 13 (3.0%) of asthma deaths
- Organic, including symptomatic, mental disorders (F00-F09) was listed as a contributing cause for 11 (2.6%) of asthma deaths.

Figure 4

**Age Adjusted* Asthma Death Rate per Million Population
by Gender, New Jersey, 2000-2006**



*Direct method of age adjustment using the 2000 U.S. standard population

Data Source – NJ Multiple Cause of Death Files, 2000-2006

Population Source – Annual Estimates of the Resident Population for New Jersey, 2000-2006

Table 4

**Number of Asthma Deaths and Age Adjusted* Asthma Death Rate
by Gender, New Jersey, 2000-2006**

Females	Number of Deaths	Rate per Million Standard Population		Males	Number of Deaths	Rate per Million Standard Population	
		Rate	95% CI ⁷			Rate	95% CI ⁷
2000	64	12.7	9.6 – 15.8	2000	43	11.4	8.0 – 14.8
2001	80	16.1	12.6 – 19.6	2001	43	10.6	7.4 – 13.8
2002	60	11.9	8.9 – 14.9	2002	50	12.4	9.0 – 15.8
2003	79	15.7	12.3 – 19.2	2003	34	8.3	5.5 – 11.1
2004	73	14.1	10.8 – 17.3	2004	31	8.1	5.3 – 11.0
2005	71	14.0	10.7 – 17.2	2005	35	8.8	5.9 – 11.7
2006	68	13.5	10.3 – 16.7	2006	40	9.7	6.7 – 12.7

*Direct method of age adjustment using the 2000 U.S. standard population

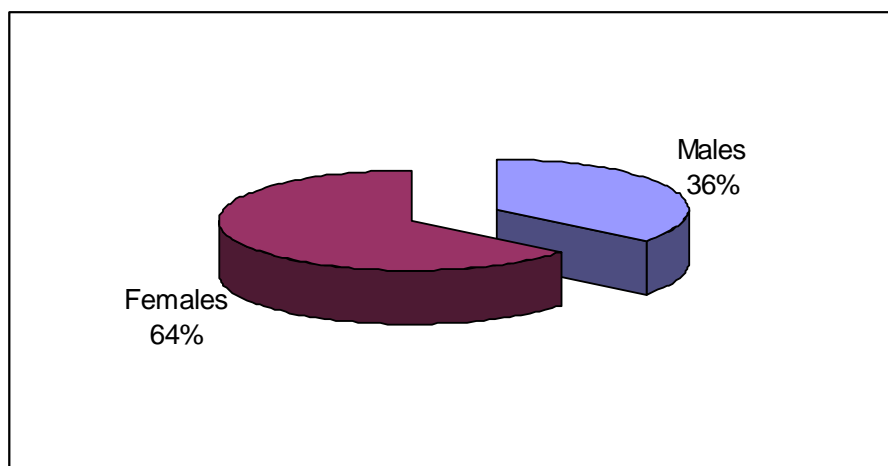
Data Source – NJ Multiple Cause of Death Files, 2000-2006

Population Source – Annual Estimates of the Resident Population for New Jersey, 2000-2006

During 2000-2006, the annual age adjusted asthma death rate was generally higher among women when compared to men.

Figure 5

Distribution of Asthma Deaths by Gender, New Jersey, 2000-2006

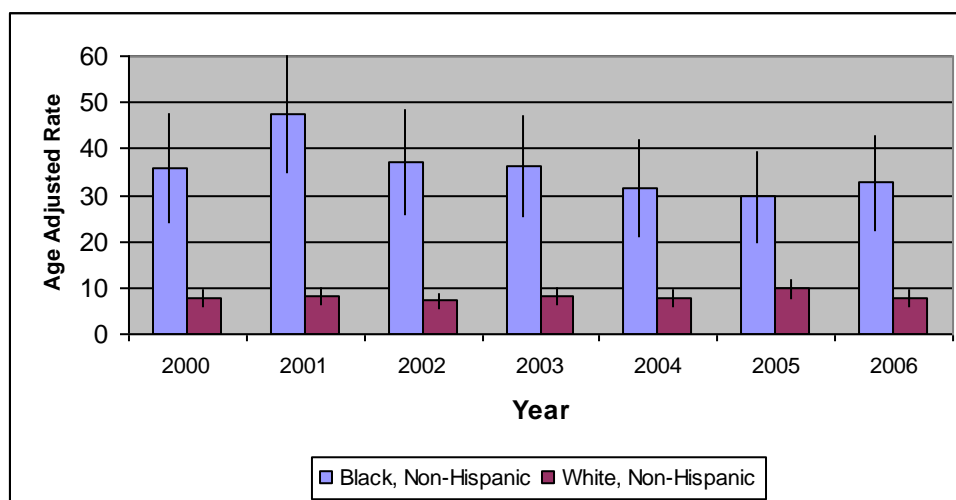


Data Source – NJ Multiple Cause of Death Files, 2000-2006

About 64% of the asthma deaths that occurred from 2000-2006 were among women.

Figure 6

**Age Adjusted* Asthma Death Rate per Million Population
by Race, New Jersey, 2000-2006**



*Direct method of age adjustment using the 2000 U.S. standard population

Data Source – NJ Multiple Cause of Death Files, 2000-2006

Population Source – July 1st resident population estimates from bridged-race estimates (vintage 2008)

Table 5							
Number of Asthma Deaths and Age Adjusted* Asthma Death Rate by Race, New Jersey, 2000-2006							
Black, Non-Hispanic	Number of Deaths	Rate per Million Standard Population		White, Non-Hispanic	Number of Deaths	Rate per Million Standard Population	
		Rate	95% CI⁷			Rate	95% CI⁷
2000	34	36.0	23.9 – 48.1	2000	55	7.8	5.7 – 9.9
2001	51	47.6	34.5 – 60.6	2001	58	8.4	6.2 – 10.6
2002	40	37.2	25.6 – 48.7	2002	52	7.3	5.3 – 9.3
2003	39	36.3	24.9 – 47.7	2003	56	8.4	6.2 – 10.5
2004	33	31.7	20.9 – 42.5	2004	56	7.8	5.8 – 9.9
2005	32	29.6	19.4 – 39.9	2005	66	9.9	7.5 – 12.2
2006	36	32.7	22.0 – 43.3	2006	52	7.8	5.7 – 9.9

*Direct method of age adjustment using the 2000 U.S. standard population

Data Source – Data Source – NJ Multiple Cause of Death Files, 2000-2006

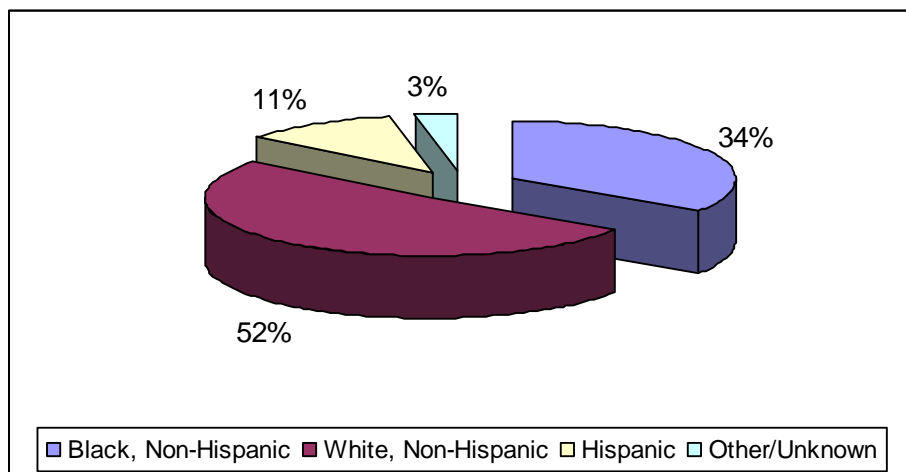
Population Source – July 1st resident population estimates from bridged-race estimates (vintage 2008)

During 2000-2006, the annual age adjusted asthma death rate was considerably higher among black, non-Hispanic residents as compared to white, non-Hispanic residents each year. Because the number of asthma deaths is relatively small, it is not possible to report annual rates for many groups including the Hispanic, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, and Asian populations.

The 2004-2006 average annual age adjusted asthma death rate for Hispanic residents was 12.4 deaths per million population (95% CI: 8.0-16.8) as compared to 31.3 deaths per million population (95% CI: 25.2-37.4) for black, non-Hispanic residents and 8.5 deaths per million population (95% CI: 7.2-9.7) for white, non-Hispanic residents during the same time period. Data for Hispanics should be interpreted with caution since national data suggests asthma age adjusted death rates are much higher among Hispanics of Puerto Rican descent when compared to Hispanics of Cuban and Mexican descent.⁸ In New Jersey, Hispanic adults are about 27% Puerto Rican, 12% Mexican, 6% Cuban, 12% Dominican, 37% Central American or South American, and 5% other Hispanic or Latino.⁹

Figure 7

Distribution of Asthma Deaths by Race/Ethnicity, New Jersey, 2000-2006



Data Source – NJ Multiple Cause of Death Files, 2000-2006

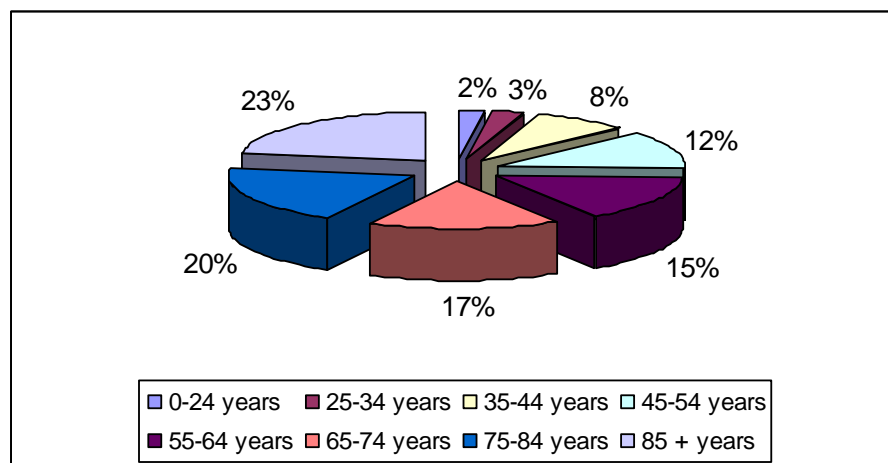
The distribution of asthma deaths from 2000-2006 shows that about 52% were among white, non-Hispanic residents, about 34% were among black, non-Hispanic residents, and about 11% were among Hispanic residents. In contrast, about 63% of state residents were white, non-Hispanic, about 13% of state residents were black, non-Hispanic, and about 16% of state residents were Hispanic in 2006.¹⁰

Asthma Related Deaths

In this report, an asthma related death is defined as a non-asthma death with a contributing asthma cause in the ICD-10 code range J45-J46 (1999-present) or the ICD-9 code range 493.0-493.9 (1989-1998).

Figure 8

Distribution of Asthma Related Deaths by Age Group, New Jersey, 2003-2006



A total of 575 asthma related deaths were reported during 2003-2006
Data Source – NJ Multiple Cause of Death Files, 2003-2006

The number of asthma related deaths during 2003-2006 ranged from 135 to 154 per year with a total of 575 asthma related deaths among residents during the four years, which is about 33% higher than the number of asthma deaths (431) during the same time period. The distribution of asthma related deaths by age group is shown in Figure 8. Although the highest number of asthma related deaths (23%) was among the oldest age group of residents (85+ years), about 40% of asthma related deaths during 2003-2006 occurred among residents younger than 65 years of age (236 deaths).

Table 6		
Underlying Causes* of Asthma Related Deaths, New Jersey, 2003-2006		
Underlying Cause (ICD-10)⁵	Number of Asthma Related Deaths	Percent of Asthma Related Deaths
Diseases of the heart (I00-I09, I11, I13, I20-I51)	229	39.8%
Malignant neoplasm (C00-C97)	73	12.7%
Accidents - unintentional injuries (V01-X59, Y85-Y86)	37	6.4%
Diabetes mellitus (E10-E14)	35	6.1%
Cerebrovascular diseases (I60-I69)	16	2.8%
Human immunodeficiency virus (HIV) disease (B20-B24)	14	2.4%
Essential hypertension and hypertensive renal disease (I10, I12, I15)	10	1.7%
Septicemia (A40-A41)	12	2.1%
Chronic lower respiratory diseases excluding asthma (J40-J44, J47)	12	2.1%
Alzheimer's disease (G30)	8	1.4%
Influenza and pneumonia (J10-J18)	6	1.0%

*Considers only those causes designated by the National Center for Health Statistics as being rankable⁶

A total of 575 asthma related deaths were reported during 2003-2006

Data Source – NJ Multiple Cause of Death Files, 2003-2006

Includes deaths with at a contributing cause of J45-J46 (asthma)

Causes associated with ≤ 5 deaths are not presented

Considering only those diagnostic codes represented in the NCHS' list of rankable causes of death⁶, the most common underlying causes associated with asthma related death in 2003-2006 are summarized in Table 6. Considering those diagnostic codes that are excluded from the NCHS list, the following was also noted:

- Obesity (E66) was listed as the underlying cause for 15 (2.6%) of asthma related deaths during this time period.

Acronyms:

ICD – International Classification of Diseases

CI – Confidence Interval

Definitions:

Confidence Interval – A range of values within which the actual value is likely to fall

Crude Death Rate – The number of deaths divided by the number of people at risk for the time period noted. Those presented here are multiplied by a million for expression as a whole number

Age-Adjusted Death Rate – A hypothetical death rate that facilitates comparison among populations that differ in underlying age structure. The age-adjusted death rates presented here were calculated with the direct method of age adjustment using the 2000 U.S. standard population.

Underlying Cause of Death – “The disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury.”¹¹

Contributing Causes of Death – “Other significant conditions contributing to the death, but not related to the disease or conditions causing it.”¹¹

ICD – “A coding system maintained by the World Health Organization and the U.S. National Center for Health Statistics used to classify causes of death on death certificates and diagnoses, injury causes, and medical procedures for hospital and emergency department visits. These codes are updated every decade or so to account for advances in medical technology.”¹²

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www.nj.gov/health/asthma

For asthma resources from the Pediatric Adult Asthma Coalition of New Jersey (PACNJ):

www.pacnj.org

For more information about New Jersey Mortality Data:

<http://www4.state.nj.us/dhss-shad/query/DeathQueryTechNotes.html>

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